

AP20 Rec'd PCT/PTO 10 MAY 2006

Floor deck member for scaffolding

The present invention relates to a floor deck member for scaffolding, wherein the floor deck member at each end has a mounting area designed to rest on a scaffold beam, wherein the floor deck member has a plurality of elongate reinforcing profiled members which are embedded in longitudinal ribs on the underside of the floor deck member, wherein between adjacent ribs there are arranged support ribs, and wherein a walk surface, the ribs and the support ribs of the floor deck member are unitarily formed of a composite plastic material.

10

It is already known to mount floor deck members of this type on scaffold beams in that they rest on a top edge of the longitudinal scaffold beams and often extend a little way beyond the outward facing side of these beams. In a solution of this kind, it is usually necessary to secure the floor deck members so that they do not slide relative to the beams, and this may optionally be done using hooks or the like that project from the underside of the floor deck members. This means in turn that when such floor deck members are stacked for transport, securing devices of this kind will take up a considerable amount of storage space, whilst the floor deck members during mounting tend to become hooked onto each other.

20

The object of the present invention is to remedy, in a simple manner, the disadvantages known hitherto in connection with such floor deck members for scaffolding, and according to the present invention, the invention is characterised in that respective end portions of said reinforcing profiled members form said mounting area when bearing against respective ones of the opposing scaffold beams, and that supporting pieces are arranged at each end of the floor deck member and designed to limit movement of the floor deck member relative to opposing scaffold beams when these support the floor deck member via the mounting area.

Advantageously, the said plastic material is composed of a polyolefin material, for example, copolymer polypropylene with an added mineral material, the plastic material also having an expansion agent added thereto during moulding. The proportion of the mineral material is 10-40%, preferably 20%, and the mineral material may advantageously be dolomite. The expansion agent may be added in an amount of 1-5% by weight, preferably 2% by weight.

35

According to further embodiments of the floor deck member, the reinforcing profiled members in the floor deck member are capable of being joined to reinforcing steel sections in a longitudinally intermediate or adjacent floor deck member.

- 5 According to yet another embodiment, the floor deck member may be capable of being split into at least two parts for insertion of one or more extension pieces which have a plurality of elongate reinforcing profiled members that are embedded in longitudinal ribs on the underside of the extension piece, and where a walk surface, the ribs and any support ribs of the extension piece are unitarily made of said composite material. The extension piece thus forms a mechanical connection with an adjacent floor deck member part when joined between the reinforcing profiled members of the floor deck member part and the reinforcing profiled members of the extension piece.

15 The invention will now be explained in more detail with reference to the attached drawings which show typical non-limiting exemplary embodiments of the invention.

Figure 1 is a perspective top view of a floor deck member according to the invention.

20 Figure 2 is a bottom view of the floor deck member according to the invention.

Figure 3 is a bottom view of a section of the floor deck member.

25 Figure 4 shows the joining principle for a floor deck member according to the invention.

Figure 5 shows an application of the floor deck member for use in a scaffold.

30 Figure 6 is a top perspective view of a modified embodiment of a floor deck member according to the invention.

Figure 7 is a bottom view of the floor deck member shown in Figure 6.

Figure 8 is an exploded view of a section of Figure 7.

Figure 9 is a view of the underside of the floor deck member shown in Figures 6 and 7.

Figure 1 shows a floor deck member 1 for scaffolding 24 (Figure 5). The floor deck member has at each end a mounting area 2, 3 which is designed to rest on a scaffold beam, as indicated in Figure 5. The mounting areas 2, 3 have respective, downwardly projecting pieces 2', 3' at each end so as to be able to limit movement of the floor deck member 1 relative to the opposing scaffold beams 25, 26 when these beams support the floor deck member, as shown in Figure 5. As shown in both Figure 1 and Figure 2, the floor deck member has a plurality of elongate reinforcing profiled members 4, 5, 6, for example, tubes having a circular cross-section, which are embedded in longitudinal ribs 7, 8, 9 on the underside 1' of the floor deck member, as shown in Figure 2. Advantageously, a plurality of respective support ribs 10, 11 are arranged between the adjacent, longitudinal ribs 7, 8, 9.

A walk surface 12, the ribs 7-9 and the support ribs 10, 11 of the floor deck member are, according to the invention, unitarily made of a composite plastic material. Respective end portions 4', 5', 6' of the said profiled members 4, 5, 6 will primarily form the mounting area 2, 3 of the floor deck member when bearing against a top edge of respective ones of the opposing scaffold beams 25, 26. The supporting pieces 2', 3' are secured, for example, by welding or riveting 30-32 to the respective profiled members 4, 5, 6.

The plastic material of the floor deck member is advantageously composed of a polyolefin material, for example, copolymer polypropylene. The plastic material also advantageously has added thereto a mineral material, and also has an expansion agent added thereto during moulding. The proportion of the mineral material in the plastic material is preferably 10-40%, most preferably 20%.

The mineral material added to the plastic material is advantageously dolomite, and said expansion agent is added to the plastic material in an amount of 1-5 % by weight, preferably 2% by weight.

It will be an advantage that floor deck members can be joined to increase their length. This is indicated in Figure 4 which shows a floor deck member that has been split into two parts 15, 16 and has reinforcing profiled members 4", 5", 6". These reinforcing profiled members 4", 5", 6" are arranged to be capable of being joined to reinforcing

profiled members in longitudinal direction 15 intermediate or adjacent floor deck member 13, where the reinforcing profiled members of the floor deck member 13 are indicated by respective reference numerals 17, 18, 19. If the floor deck member 13 is to be inserted between the floor deck member parts 15, 16, this can be done as indicated by the arrows A and B. If joining is perhaps desirable from an end portion of the members 15, 16, such as at a scaffold beam, this can be done at the areas A' or B' using the respective portions A or B of the member 13.

The elongate reinforcing profiled members 17, 18, 19 are embedded in longitudinal ribs 20, 21, 22 on the underside of the extension piece 13. Like the floor deck member 1, the walk surface 23, the ribs 20-22 and the optional support ribs 24, 25 of the extension piece are unitarily made of the aforementioned composite material. The extension piece 13 will thus be able to form a mechanical connection with adjacent floor deck member part 1; 15; 16, joining the reinforcing profiled members 4", 5", 6" of the floor deck member part to the reinforcing profiled members 17-19 of the extension piece.

In Figure 5 it is shown how the scaffolding can be erected initially by using floor deck member 1, scaffolding poles 28, 29, scaffolding crosspieces 27 and longitudinal supporting beams 25, 26 that support the floor deck member.

Figures 6-9 show a scaffold floor deck member 30, which at each end has a mounting area 33, 34 with respective downward projecting supporting piece 33', 34' to limit movement of the floor deck member 30 relative to the opposing scaffold beams 25, 26 when these beams support the floor deck member in the same way as shown in Figure 5. As shown in both Figure 8 and Figure 9, the floor deck member 30 has a plurality of elongate reinforcing profiled members 37, 38, 39, for example, tubes having a circular cross-section, which are embedded in longitudinal ribs 35, 35', 35" on the underside 30' of the floor deck member 30. Advantageously, a plurality of respective support ribs 36, 36' are arranged between the adjacent, longitudinal ribs 35, 35', 35".

The walk surface 31 of the floor deck member is made having protuberances 32; and the ribs 35, 35', 35" and the support ribs 36, 36' on the underside are, according to the invention, unitarily made of a composite plastic material. The supporting pieces 33', 34' are secured, for example, by adhesive bonding or riveting to the respective profiled members 37, 38, 39 when the profiled members have been inserted into the respective holes 37", 38", 39" in such a supporting piece. The supporting pieces 33', 34' are advantageously formed of a plastic material or of metal.

P a t e n t c l a i m s

1.

A floor deck member (1; 30) for scaffolding (24), wherein the floor deck member at each end has a mounting area (2, 3; 33, 34) designed to rest on a scaffold beam (25; 26),

- wherein the floor deck member has a plurality of elongate reinforcing profiled members (4, 5, 6; 37, 38, 39) which are embedded in longitudinal ribs (7, 8, 9; 35, 35', 35'') on the underside of the floor deck member;
- wherein between adjacent ribs (7, 8, 9; 35, 35', 35'') there are arranged support ribs (10, 11; 36, 36'); and
- wherein a walk surface (12, 31, 32), the ribs (7, 8, 9; 35, 35', 35'') and the support ribs (10, 11; 36, 36') of the floor deck member are unitarily made of a composite plastic material, characterised in that respective end portions (4', 5', 6'; 37', 38', 39') of said profiled members (4, 5, 6; 35, 35', 35'') form said mounting area when bearing against respective ones of the opposing scaffold beams (25; 26), and that supporting pieces (2, 3; 33', 34') are arranged at each end of the floor deck member and designed to limit movement of the floor deck member (1; 30) relative to opposing scaffold beams (25; 26) when these support the floor deck member via the mounting areas (2, 3; 33, 34).

2.

A floor deck member for scaffolding as stated in claim 1, characterised in that the plastic material is composed of polyolefin material, for example, copolymer polypropylene, with an added mineral material, the plastic material also having an expansion material added thereto during moulding.

3.

A floor deck member for scaffolding as stated in claim 2, characterised in that the proportion of the mineral material is 10-40%, preferably 20%.

4.

A floor deck member for scaffolding as stated in claim 3, characterised in that the mineral material is dolomite.

5.

A floor deck member for scaffolding as stated in claim 2, characterised in that the expansion material is added in an amount of 1-5% by weight, preferably 2% by weight.

5 6.

A floor deck member for scaffolding as stated in one or more of the preceding claims, characterised in that the reinforcing profiled members (4", 5", 6") in the floor deck member are capable of being joined to reinforcing profiled members in a longitudinal direction in an intermediate or adjacent floor deck member (13).

10

7.

A floor deck member for scaffolding as stated in one or more of preceding claims 1-5, characterised in that the floor deck member can be split into at least two parts (19, 16) for insertion of one or more extension pieces (13), which have a plurality of elongate reinforcing profiled members (17, 18, 19) that are embedded in longitudinal ribs (20, 21, 22) on the underside of the extension piece, and where a walk surface (23), the ribs (20-22) and optional support ribs (24, 25) of the extension piece are unitarily made of said composite material, and that the extension piece forms a mechanical connection with adjacent floor deck member parts (1; 15; 16) when joined between the reinforcing profiled members (4", 5", 6") of the floor deck member part and the reinforcing profiled members (17-19) of the extension piece.

15

20

1/6

Fig.1.

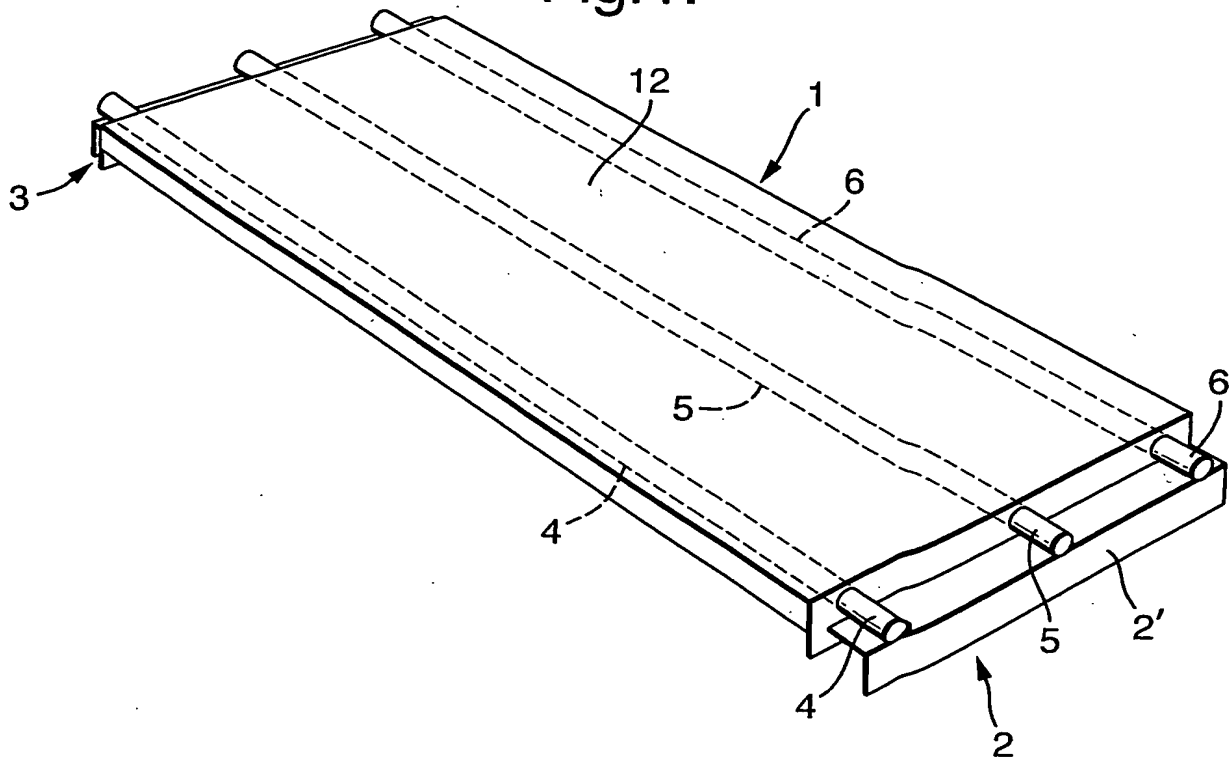
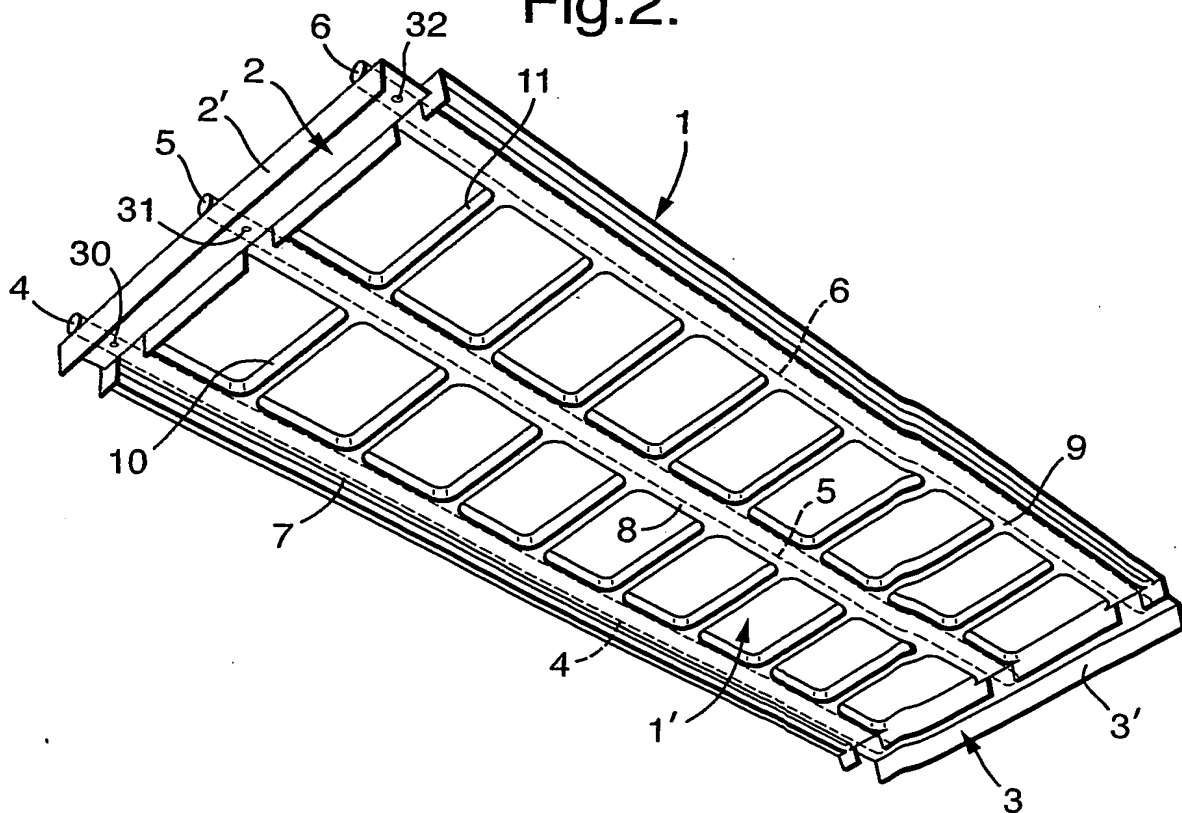


Fig.2.



2/6

Fig.3.

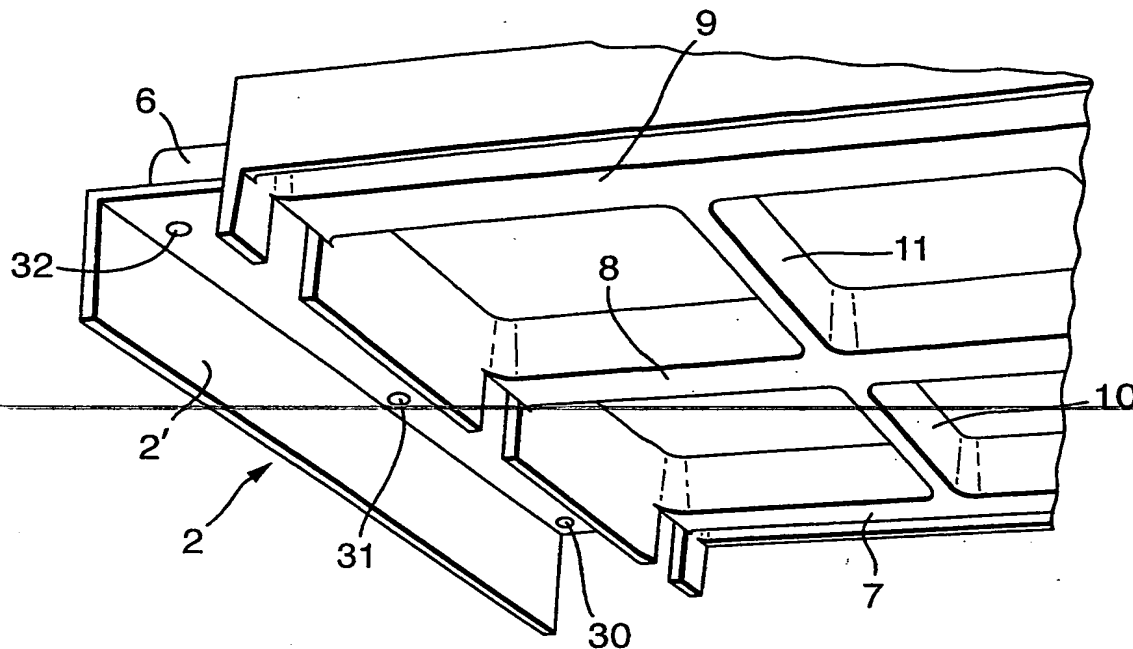
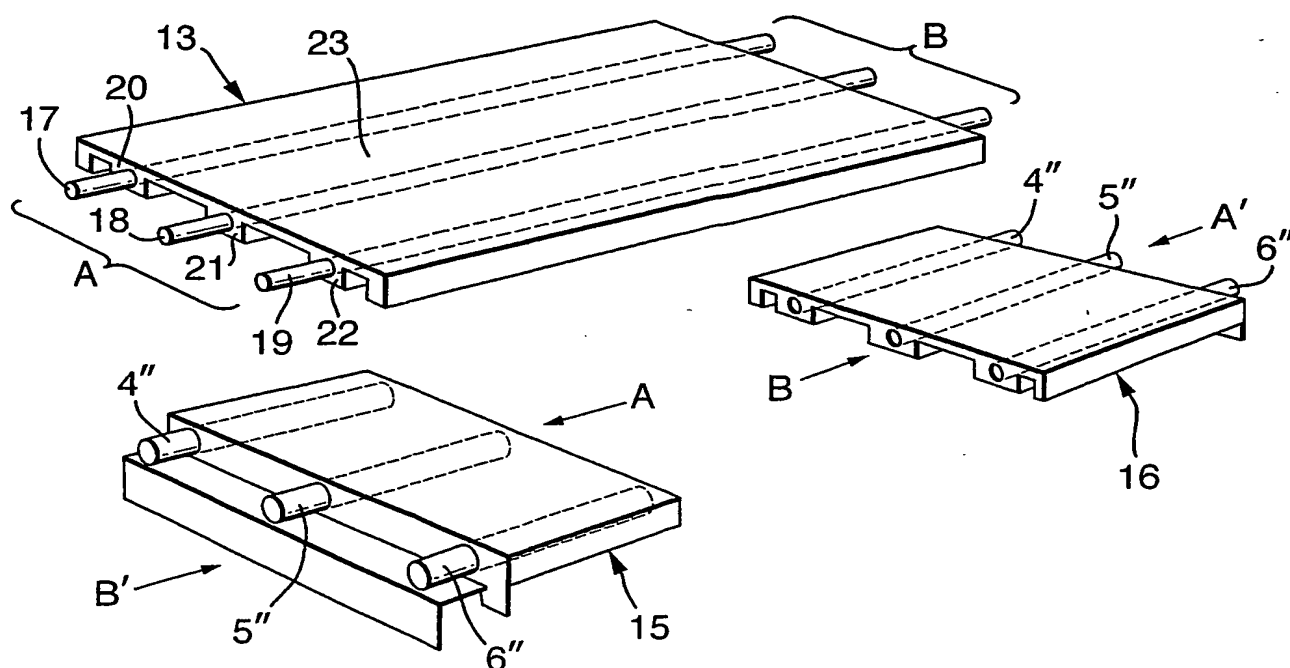
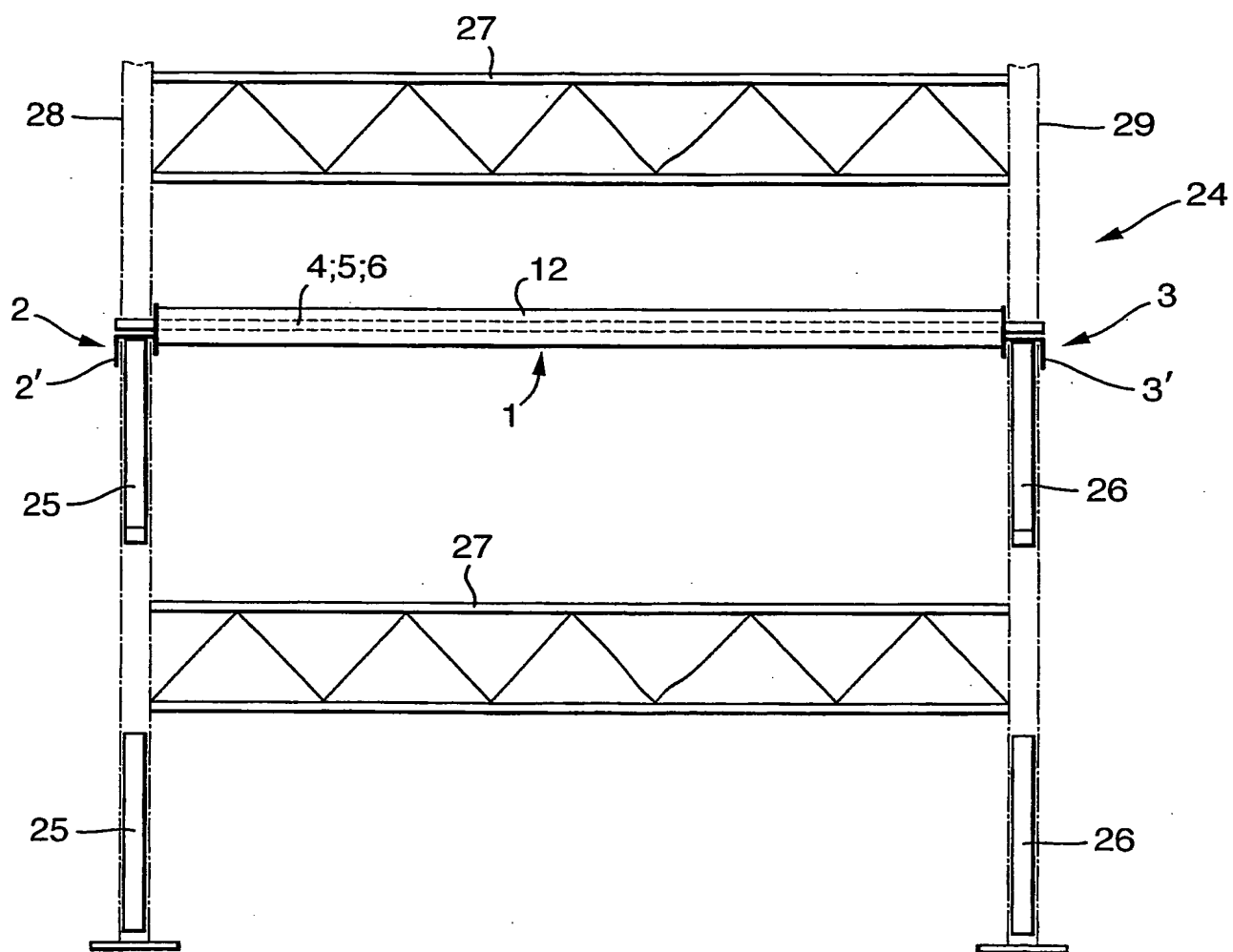


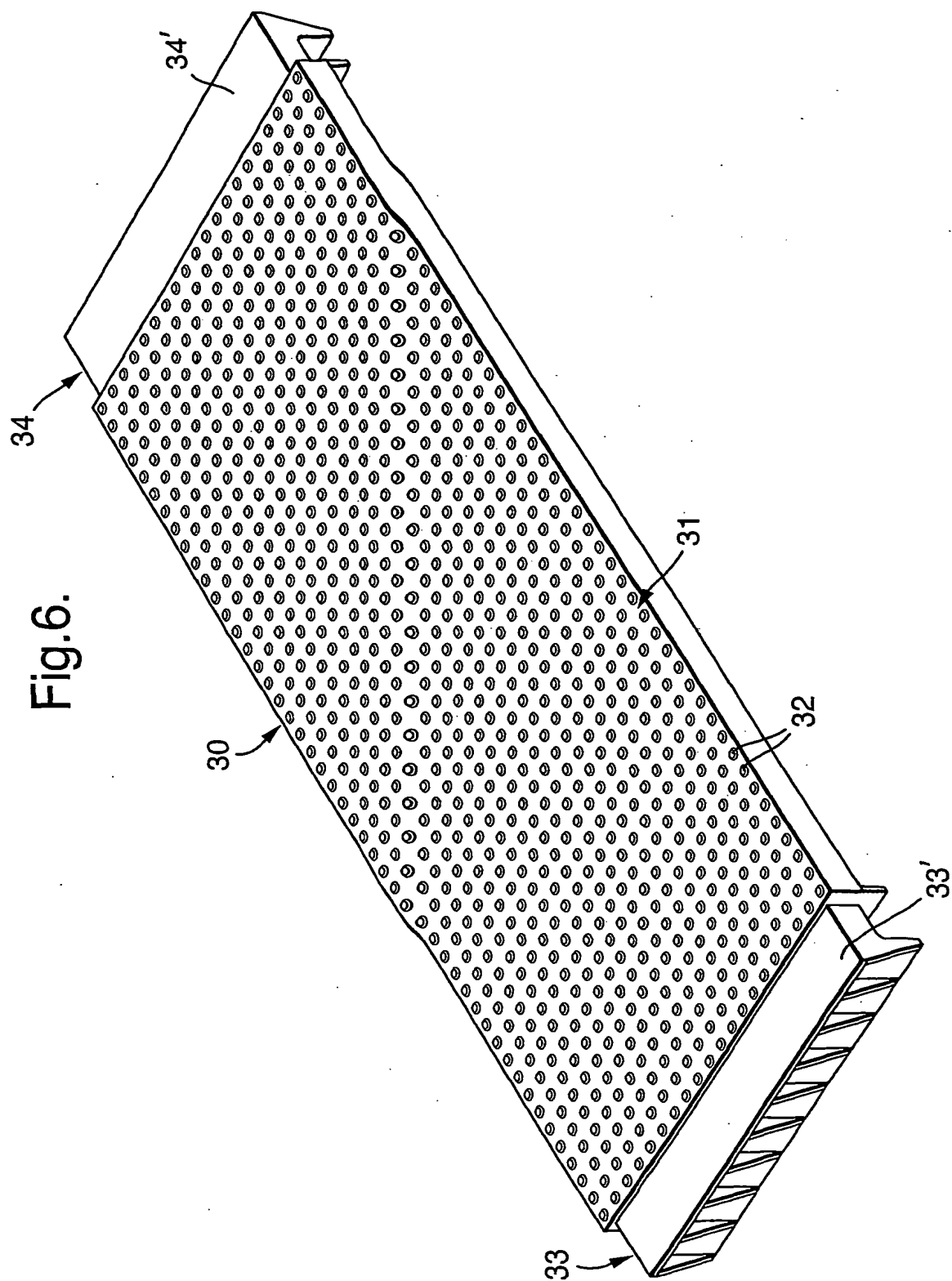
Fig.4.



3/6

Fig.5.





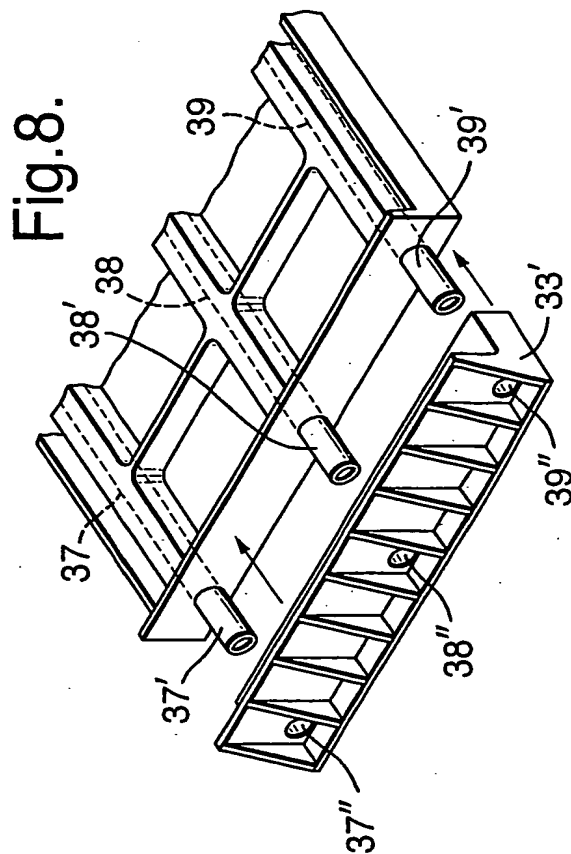
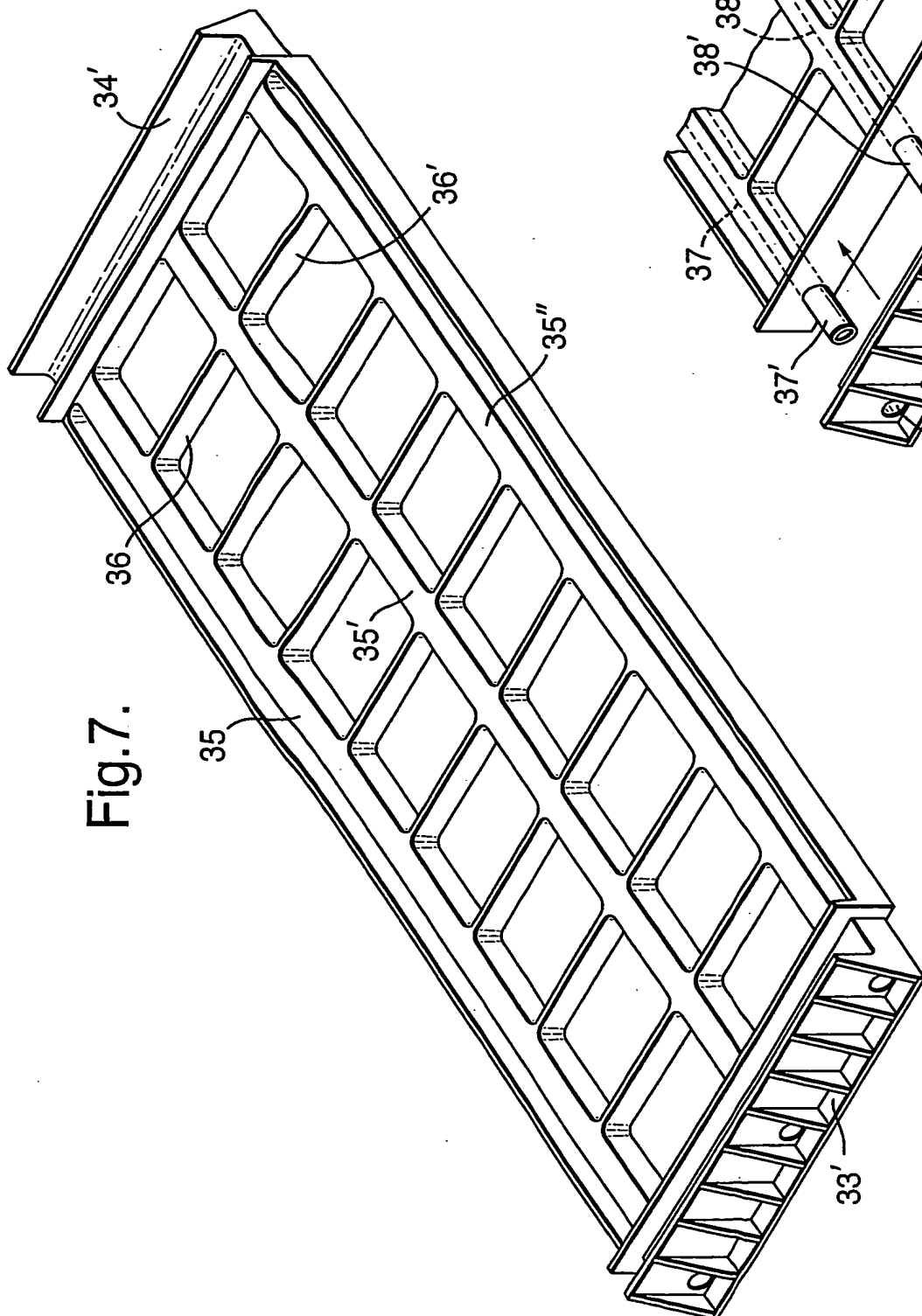
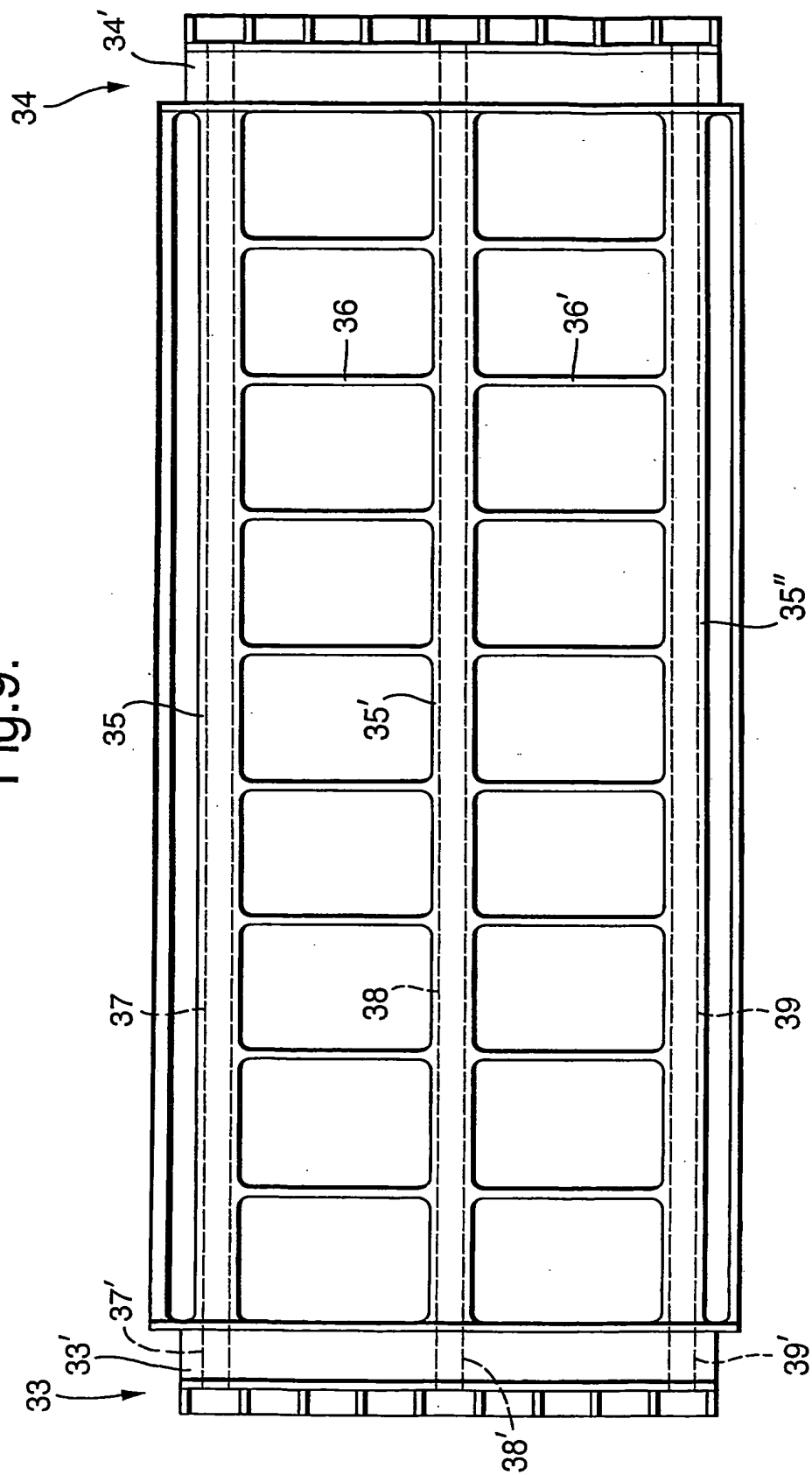


Fig.9.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/NO 2004/000338

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: E04G 1/15, E04G 5/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: E04G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|-----------------------|
| A | WO 0104437 A1 (BOTHWELL, T.B.), 18 January 2001 (18.01.2001) | 1-7 |
| P,A | DE 10254033 A1 (WILHELM LAYHER VERMÖGENSVERWALTUNGS-GMBH), 3 June 2004 (03.06.2004) | 1-7 |
| A | US 20030183453 A1 (C.D. ARMSTRONG), 2 October 2003 (02.10.2003) | 1-7 |
| A | NL 8501367 A (H. BOUWHUIS), 1 December 1986 (01.12.1986) | 1-7 |

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search

28 February 2005

Date of mailing of the international search report

03-03-2005

Name and mailing address of the ISA/

Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. +46 8 666 02 86

Authorized officer

Åke Olofsson / MRo
Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/NO 2004/000338

| | | | | | | | |
|----|-------------|----|------------|------|-------------|---|------------|
| WO | 0104437 | A1 | 18/01/2001 | AU | 6344300 | A | 30/01/2001 |
| | | | | US | 6431316 | B | 13/08/2002 |
| | | | | US | 20010027899 | A | 11/10/2001 |
| | | | | US | 20020134621 | A | 26/09/2002 |
| | | | | US | 20040040788 | A | 04/03/2004 |
| DE | 10254033 | A1 | 03/06/2004 | EP | 1426523 | A | 09/06/2004 |
| US | 20030183453 | A1 | 02/10/2003 | US | 6745871 | B | 08/06/2004 |
| NL | 8501367 | A | 01/12/1986 | NONE | | | |